

WHAT IS CLAIMED IS:

1. A method of aligning ferroelectric liquid crystal material in the presence of an applied electric field, comprising:

providing a liquid crystal display (LCD) panel having a plurality of gate lines, a plurality of data lines, and a plurality of ferroelectric liquid crystal (FLC) cells;

providing FLC material within the FLC cells;

applying an electric field to the FLC cells to impart an initial alignment to the provided FLC material;

providing a data drive circuit for driving the plurality of data lines;

providing a gate drive circuit for driving the plurality of gate lines;

providing a source printed circuit board (PCB) connected to the LCD panel through the data drive circuit, wherein the source PCB includes a common voltage terminal and a ground voltage terminal;

providing a gate PCB connected to the LCD panel through the gate drive circuit, wherein the gate PCB includes a common voltage terminal and a ground voltage terminal;
and

aligning the initially aligned FLC material, the aligning comprising:

applying a first voltage to the common voltage terminal on the source PCB;

applying a second voltage to the ground voltage terminal on the source PCB

simultaneously with the first voltage to the common voltage terminal on the source PCB;

applying the first voltage to the common voltage terminal formed on the gate PCB; and

applying the second voltage to the ground terminal formed on the gate PCB simultaneously with the first voltage to the common voltage terminal formed on the gate PCB.

2. The method of aligning ferroelectric liquid crystal material according to claim 1, wherein providing the FLC material includes injecting the FLC material.

3. The method of aligning ferroelectric liquid crystal material according to claim 1, wherein providing the FLC material includes dispensing the FLC material.

4. The method of aligning ferroelectric liquid crystal material according to claim 1, wherein the initial alignment of the FLC material is deteriorated prior to aligning the initially aligned FLC material.

5. The method of aligning ferroelectric liquid crystal material according to claim 4, wherein aligning the initially aligned FLC material substantially restores the initial alignment of the FLC material.

6. The method of aligning ferroelectric liquid crystal material according to claim 1, wherein the FLC cell includes Half V-Switching Mode FLC material.

7. The method of aligning ferroelectric liquid crystal material according to claim 1, wherein the FLC material is initially aligned in the presence of the applied electric field while being cooled below a phase transformation temperature, wherein the phase of the cooled FLC material transforms from a nematic phase to a smectic C phase.

8. The method of aligning ferroelectric liquid crystal material according to claim 1, wherein the first voltage is greater than the second voltage.

9. The method of aligning ferroelectric liquid crystal material according to claim 1, wherein the second voltage is greater than the first voltage.

10. The method of aligning ferroelectric liquid crystal material according to claim 1, wherein substantially no voltage is applied to the gate lines upon aligning the initially aligned FLC material.

11. The method of aligning ferroelectric liquid crystal material according to

claim 1, further comprising providing the gate lines in a floating state upon aligning the initially aligned FLC material.

12. The method of aligning ferroelectric liquid crystal material according to claim 1, wherein a common power voltage is not applied to the source PCB upon aligning the initially aligned FLC material.

13. A method of aligning ferroelectric liquid crystal material display panel, comprising:

providing a liquid crystal display (LCD) panel having a plurality of gate lines, a plurality of data lines, and a plurality of liquid crystal cells containing initially aligned ferroelectric liquid crystal (FLC) material;

setting an analog gamma voltage substantially equal to a first voltage, wherein the analog gamma voltage is set independently of a gray scale value of a digital video data;

applying the first voltage to the plurality of data lines; and

aligning the initially aligned FLC material by applying a second voltage to a common electrode of the LCD panel, wherein the second voltage is different from the first voltage.

14. The method of aligning ferroelectric liquid crystal material according to claim 13, wherein the initial alignment of the FLC material is deteriorated prior to aligning

the initially aligned FLC material.

15. The method of aligning ferroelectric liquid crystal material according to claim 14, wherein aligning the initially aligned FLC material substantially restores the initial alignment of the FLC material.

16. The method of aligning ferroelectric liquid crystal material according to claim 13, wherein the FLC cell includes Half V-Switching Mode FLC material.

17. The method of aligning ferroelectric liquid crystal material according to claim 13, wherein the FLC material is initially aligned in the presence of the applied electric field while being cooled below a phase transformation temperature, wherein the phase of the cooled FLC material transforms from a nematic phase to a smectic C phase.

18. The method of aligning ferroelectric liquid crystal material according to claim 13, wherein substantially no voltage is applied to the plurality of gate lines upon aligning the initially aligned FLC material.

19. The method of aligning ferroelectric liquid crystal material according to claim 13, further comprising providing the gate lines in a floating state upon aligning the

initially aligned FLC material.

20. A ferroelectric liquid crystal display, comprising:

a liquid crystal display (LCD) panel having a plurality of gate lines, a plurality of data lines, a plurality of ferroelectric liquid crystal (FLC) cells containing FLC material having an initial alignment, and a common electrode;

a source printed circuit board (PCB) including a ground voltage terminal for applying a first voltage and a common voltage terminal for applying a second voltage;

a data driving circuit for driving the plurality of data lines, wherein the LCD panel is electrically connected to the source PCB via the data driving circuit;

a gamma circuit for generating a substantially uniform voltage independent of a gray scale value of a digital video data using the first voltage, wherein the first voltage is transmittable to the plurality of data lines via the data driving circuit upon an alignment of the initially aligned FLC material; and

a common electrode driving circuit for applying the second voltage to the common electrode upon the alignment of the initially aligned FLC material.

21. The ferroelectric liquid crystal display according to claim 20, wherein an alignment of the initially aligned FLC material is restorable in the presence of the first and second voltages.

22. The ferroelectric liquid crystal display according to claim 20, wherein the FLC cell includes Half-Switching Mode FLC material.

23. The ferroelectric liquid crystal display according to claim 20, wherein the FLC material is initially aligned in the presence of the applied electric field while being cooled below a phase transformation temperature, wherein the phase of the cooled FLC material transforms from a nematic phase to a smectic C phase.

24. The ferroelectric liquid crystal display according to claim 20, wherein the first voltage is greater than the second voltage.

25. The ferroelectric liquid crystal display according to claim 20, wherein the second voltage is greater than the first voltage.

26. The ferroelectric liquid crystal display according to claim 20, further comprising a gate driving circuit for driving the plurality of gate lines, wherein substantially no voltage is applicable to the gate lines in the presence of the applied first and second voltages.

27. The ferroelectric liquid crystal display according to claim 20, wherein

the gate lines are provided in a floating state in the presence of the applied first and second voltages.